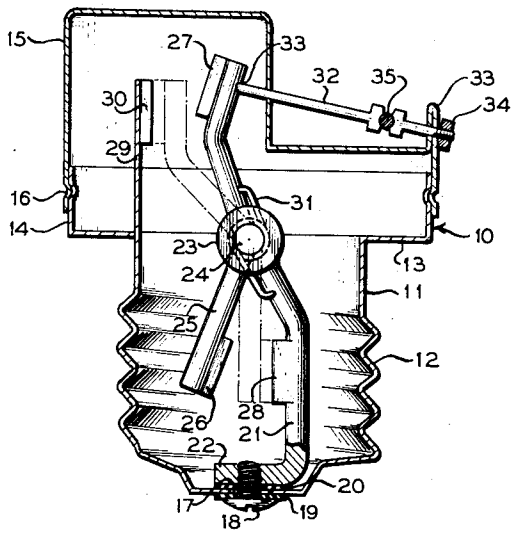
June 13, 1950 E. C. BARTZ 2,511,236

HEAT RESPONSIVE SWITCH

Filed Aug. 2, 1948

FIG. 1



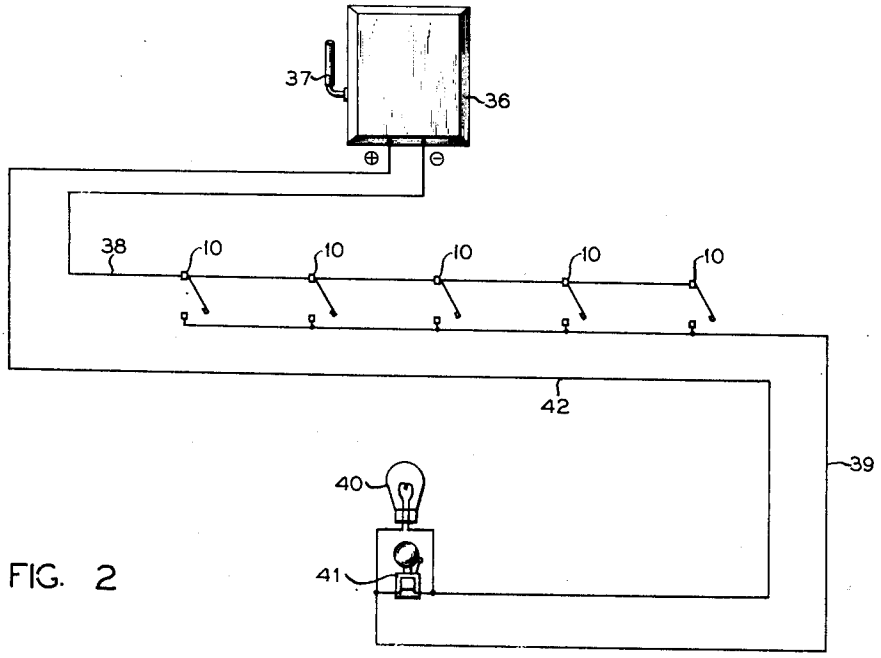


FIG. 2

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HEAT RESPONSIVE SWITCH

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5 Claims. (Cl. 200—142)

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This invention relates to heat responsive devices and more particularly to a normally open switch constructed to automatically close upon a predetermined rise in temperature, in the area immediately surrounding the switch.

This invention is primarily designed to be used in conjunction with a fire alarm system to facilitate the operation of a visual and audible alarm in the event of a fire in a structure which results in a predetermined rise in temperature. Many devices have been proposed and developed with the intention of providing an adequate fire alarm system, but such devices have generally been large and bulky, expensive to manufacture and install, and in many cases have not been reliable in operation.

It is therefore an object of this invention to provide a relatively inexpensive easily constructed automatic switch which may be installed in an existing building or other structure, or which may be installed during the initial building of such structure.

It is a further object of this invention to provide an automatic heat responsive switch which may be installed in conventional electric lamp sockets and which may be provided in a sufficient quantity to give adequate protection to a relatively large structure at a relatively low cost.

It is a further object of this invention to provide an automatic heat responsive switch composed of a minimum number of parts and which may be largely manufactured by the utilization of automatic machinery thus materially reducing the cost thereof.

Further objects and advantages of the invention will be aparent from the following description taken in conjunction with the accompanying drawings, wherein:

Figure 1 is an elevational view with parts in section for greater clarity and showing the internal structure of the switch of this invention; and

Figure 2 is a schematic diagram showing a fire alarm system incorporating the switch of this invention.

With continued reference to the drawings there is shown in Figure 1 a heat responsive switch 10 comprising a base 11 of relatively thin sheet metal provided with screw threads 12. The base 11 is substantially the same shape and size as the base of a conventional electric lamp and the screw threads 12 are designed to engage and mate with the threads of a conventional electric lamp socket. The upper portion of base 11 is provided with a flange 13 and a cylindrical portion 14 somewhat larger in diameter than the

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base 11. Received over the cylindrical portion 14 is a cap or cover 15 of plastic or the like and there may be provided in the cap and cylindrical portion mating projections and indentations 16 in order to releasably secure the cap in position.

The base 11 is provided in the bottom thereof with an aperture 17 in which there is disposed a screw threaded fastening member 18. The aperture 17 is somewhat larger than the external diameter of the screw threaded member 18 in order that there will be no electrical contact between the two and for this purpose there is further provided washers 19 and 20 positioned externally and internally respectively of the base in order to prevent contact of the head of the screw threaded fastening member with the base, these washers being formed of insulating material. Screw threaded fastening member 18 serves to rigidly secure in place within the base 11 an upstanding supporting member 21 the portion 22 of this member being spaced from the base 11 by insulating washer 20. Member 21 terminates at the upper end thereof in an enlarged portion 23 provided with a bore therethrough for the reception of a pivot pin 24. Pivotally mounted upon pin 24 is a switch arm 25 provided with contacts 26 and 27 at each end thereof. Member 21 is also provided with a contact 28 substantially midway of the length thereof, this contact engaging contact 26 on arm 25 when the switch is in closed position.

Base 11 is further provided with an upstanding portion 29 to which is secured a contact 30 which is intended to be engaged by contact 27 when the switch is in closed position. Contacts 27 and 30, and 26 and 28 are urged toward engagement by a spring 31 disposed around the pivot pin 24, the ends of the spring 31 engaging the member 21 and the arm 25 in a manner to cause rotation of the arm 25 and engagement of the contacts.

The contacts are normally out of engagement and the arm 25 is held in this position by a link 32 removably fixed to the arm 25 at 33. The opposite end of link 32 is removably secured to an upstanding portion 33 of the cover 15 by screw threaded fastening means or the like 34. Link 32 is formed in two sections, these sections being joined by a body of fusible material 35 which is designed to melt and allow the parts of the link to separate upon exposure to a predetermined temperature.

It will thus be seen that in operation the switch is normally held in open position by the link 32 but upon a predetermined rise in temperature

in the area immediately surrounding the switch the fusible material **35** will melt and allow the arm **25** to move the contacts into engagement with each other under the action of spring **31**, thus completing a circuit between screw threaded member **18** and the base **11**.

In Figure 2 there is shown a circuit incorporating the switch of this invention and this circuit may comprise a conventional switch box **36** connected to a source of electricity and provided with a switch operating handle **37** and if desired a transformer may be incorporated to reduce the voltage present in the circuit. A suitable number of switches **10** may be incorporated in the circuit and of course these switches should be positioned in the structure to be protected at any locations where fire is likely to occur, and a sufficient number should be used in order to insure that immediate warning will be given of any abnormal rise in temperature in any part of the structure. Voltage is applied to the switch **10** by a lead **38** connected to a conventional lamp socket in which the switch **10** is installed, this lead being attached to a contact in engagement with a screw threaded member **18**. The opposite contact of the switch is connected through lead **39** to a lamp **40** and to an alarm bell **41** both of which may be incorporated in one unitary structure portion externally of the building where it should be easily visible or audible to persons in the vicinity. The opposite side of the lamp **40** and bell **41** is connected to the voltage source by lead **42**.

It will thus be seen that there has been provided by this invention a very simple and inexpensive heat responsive switch which may be installed in any structure where there is likely to be an abnormal rise in temperature and which may be installed with the use of a conventional electrical equipment. The relatively low cost of this device making possible the installation of a sufficient number to give adequate warning of an abnormal rise in temperature in any part of a structure.

It will be obvious to those skilled in the art that various changes may be made in the invention without departing from the spirit and scope thereof and therefore the invention is not limited to that which is shown in the drawing and described in the specification but only as indicated in the appended claims.

What is claimed is:

1. A heat responsive switch comprising a base having screw threads thereon adapted to be received in a standard lamp socket, a cover for said base, an upstanding member secured to the bottom of said base and insulated therefrom, the securing means therefor providing an external contact, a switch arm pivotally mounted on the upper end of said upstanding member, contacts on each end of said switch arm, a contact secured to said base and adapted to be engaged by one of the contacts on said arm, a contact on said upstanding member and adapted to be engaged by the other contact on said arm, spring means associated with said arm and said upstanding member and urging said contacts into engagement, said contacts being normally held out of engagement by a link composed of a plurality of parts joined together by a body of fusible material, said link being removably secured at one end to said arm and the opposite end of said link being removably secured to a portion of said cover whereby upon an abnormal rise in temperature in the area immediately surrounding said switch said fusible material will be melted, thus permitting the parts of said link to separate and said contacts to be brought into engagement thereby closing said switch.

2. A heat responsive switch comprising a base having screw threads thereon adapted to be received in a standard lamp socket, a cover for said base, an upstanding member secured to said base and insulated therefrom, external contact means connected to said upstanding member, a switch arm pivotally mounted on the upper end of said upstanding member, contacts on each end of said switch arm, contacts on said base and said upstanding member, spring means associated with said arm and said upstanding member and urging the contacts on said arm into engagement with the contacts on said base and upstanding member, said contacts being normally held out of engagement by a link composed of a plurality of parts joined together by a body of fusible material, said link being removably secured at one end to said arm and the opposite end of said link being removably secured to a portion of said cover whereby upon an abnormal rise in temperature in the area immediately surrounding said switch, said fusible material will be melted thus permitting the parts of said link to separate and the contacts to be brought into engagement thereby closing said switch.

3. A heat responsive switch comprising a base having screw threads thereon adapted to be received in a standard lamp socket, a cover for said base, a member secured to said base and insulated therefrom, contact means externally of said base and connected to said member, a switch arm pivotally mounted on said member, contacts on said switch arm, contacts on said base and said member, resilient means associated with said arm and said member and urging the contacts on said arm into engagement with the contacts on said base and said member, said contacts being normally held out of engagement by a link including a body of fusible material, said link being removably secured at one end to said arm and the opposite end of said link being removably secured to a portion of said cover whereby upon an abnormal rise in temperature in the area immediately surrounding said switch said fusible material will be melted, thus permitting said contacts to be brought into engagement thereby closing said switch.

4. A heat responsive switch comprising a base having screw threads thereon adapted to be received in a standard lamp socket, a cover for said base, means secured to said base and pivotally mounting a switch arm, contact means externally of said base and connected to said means, contacts on said switch arm, contacts on said base and said means, resilient means constructed and arranged to urge the contacts on said arm into engagement with the contacts on said base and said means, said contacts being normally held out of engagement by a link including a body of fusible material whereby upon an abnormal rise in temperature in the area immediately surrounding said switch said fusible material will be melted thus permitting engagement of said contacts thereby closing said switch.

5. A heat responsive switch comprising a base having screw threads thereon adapted to be received in a standard lamp socket, means pivotally mounting a switch arm within said base, contact means externally of said base and connected to said means, contacts on said switch arm, contacts on said base and said means, means to urge the

contacts on said arm into engagement with the contacts on said base and said means, said contacts being normally held out of engagement by a link including a body of fusible material whereby upon an abnormal rise in temperature in the area immediately surrounding said switch said fusible material will be melted thus permitting said contacts to engage thereby closing said switch.

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